DOCUMENT RESUME

ED 034 813 UD 009 279

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TITLE	Deprivation, Development, and Diffusion.
INSTITUTION	George Peabody Coll. for Teachers, Nashville, Tenn.
SPONS AGENCY	National Inst. of Mental Health (DHEW), Bethesda, Md.
REPORT NO	NIMH-5-R11-MH-765
PUB DATE	4 Sep 66
NOTE	25p.; Speech given at the Meeting of the Division of School Psychologists, American Psychological Association, September 4, 1966
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.35
DESCRIPTORS	Academic Aptitude, *Developmental Programs, *Educationally Disadvantaged, Educational Retardation, Intellectual Development, Intelligence, *Intervention, Learning Readiness, *Preschool Children, *Preschool Programs, School Social Workers, Socioeconomic Status, Southern States
IDENTIFIERS	Early Training Project, Nashville

ABSTRACT

The Early Training Project, supported by the National Institute of Mental Health experimentally tested a developmental intervention program designed to improve the educability of young educationally deprived children. Three groups were randomized from a group of 65 deprived children born in 1958 in a small southern city. One group had three summers of a specially planned preschool, the other two. Both had the services of a specially trained home visitor during the first grade. The third group served as the local control group. A fourth group in a town similar in economic structure, but 60 miles distant, served as an additional control group. The maximum effect of intervention on intelligence scores was obtained just prior to school entrance. An extended program of pre-school intervention can have lasting effects only if the public school and community cooperatively "capitalize" on such gains. (EM)

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DEPRIVATION, DEVELOPMENT, AND DIFFUSION[1,2]

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This afternoon I should like to talk with you about a research study just entering its sixth year, one that is concerned with the experimental testing of an intervention program designed to improve the educability of young deprived children. This study, the Early Training Project, to give it its short name, grew originally out of the concerns of the school administration in the city in which the Peabody program in school psychology maintains a field and practicum center for its students.

One problem, of several mentioned by the superintendent of schools, as the staff of the Peabody school psychology program talked with him about research possibilities, was that of the progressive retardation in achievement shown by the children in one of the city schools, a school which was all Negro, and in which as many as 75 percent of the children came from deprived backgrounds. After some preliminary data gathering by students in the school psychology program, it became clear not only that such progressive retardation did exist, but also that the majority of the children were at a substantial disadvantage in the beginning, as shown on reading readiness tests and on first grade achievement.

And so, largely for practicum experience for students in planning research, in carrying it out, evaluating the results, and in gaining actual experience with young children, we designed a special ten-weeks intervention program to conduct with a group of deprived children for ten weeks prior to entrance into the first grade.

The results of this study intrigued us enough that we decided to plan a more extended one. And so, Rupert Klaus and I began in 1961 to plan a new intervention project with which we would begin much earlier with children, provide a more massive experience for them, and involve the mothers to a greater extent than we had done in the pilot study.

This study, The Early Training Project, from the standpoint of its design, the nature of the intervention program, and certain of its interim results, has been described in previous papers of this association and elsewhere. I should, therefore, like to spend my major time this afternoon in describing the long term results of the study - at least through the past summer. Since many of you, however, are probably not acquainted with the study, I hope others will forgive me if I take fifteen or so minutes to review the design of the study, the general rationale on which the

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[1] Presidential Address, Division of School Psychologists, American Psychological Association, September 4, 1966.

[2] This project is supported by the National Institute of Mental Health, under Mental Health Project Grant 5-RII-MH-765.

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intervention program was based, and the actual operation of the program. This time I have brought some pictures along to illustrate my points, in the hopes that they might entertain those of you who are familiar with at least the bare bones of the study.

Our general strategy grows out of the fact that at the time we began, research in the field had not yet demonstrated whether it is possible to offset substantially the progressive retardation commonly observed in deprived children in their years of schooling. It is true that several studies had demonstrated a 5 to 15 points IQ gain in young children with special interventions no longer than three months. These gains, however, tended to be temporary, and are probably explicable in part by the changes in motivation from pre-test to post-test associated with experiences in which children learn to respond to a range of adults, particularly verbally, and to become somewhat task-oriented.

Our effort was to design an "experimental package of best bets" for intervention. This package was based upon available research on social class, cognitive development, and motivation. From such research we attempted to derive those characteristics which appeared to be related to the differences in school performance of middle class and culturally deprived children and which also appeared to be subject to possible manipulation. Since we were concerned with school applications, as well, we attempted to do this within a framework it would be possible to duplicate, on a wide scale, should the project prove to be successful.

Our general aim was to make our intervention program <u>developmental</u> rather than <u>remedial</u>. Thus, we planned to begin at an early age. We set up four groups of children. Three of these groups were randomized from a group of 65 deprived children born in 1958 in a small southern city. One of these groups had three summers of a specially planned preschool, plus weekly visits during the remainder of the year by a specially trained home visitor whose task it was to involve the mother and child in activities similar to those of the summer experience and to give the mother some help in learning the instrumental steps involved in enabling her child to realize her aspirations for him, educationally and vocationally. A second group had a similar intervention schedule, except that it began one year later and thus involved only two summer schools. Both of these groups had the services of the home visitor during the first grade. The third group served as the local control group. A fourth group, in a town similar in economic structure, but 60 miles distant, served as an additional control group. This last group was added to the design since we anticipated the possibility of diffusion into the control group in the small city in which we worked; we hoped by the additional group to arrive at some estimate of such diffusion effects.

I should like to begin now to show you my pictures, starting with some taken in the community in which the major part of the study was conducted. I hope they will serve to give you a feeling for the type homes from which the children come, and some notion of the origins of the particular patterns of motivation and cognitive deficit often observed in deprived young children.

First is a row of rented houses on a dull day, and here is a closeup of the porch of one. The closeup shows the general deterioration not visible in the distant shot. The next two pictures are typical of the patterns of child care in this community. Many of the mothers work and older siblings, or grandmothers and great-grandmothers, or neighbors care for the children. Often, too, the children are almost completely unsupervised, even in spots, such as this, that represent actual physical hazards. It seems likely in such situations that the kinds of reinforcement the child receives will not be particularly conducive to later educability. The older sibling, prematurely saddled with child care, the aged great-grandmother, or the mother herself, when she comes home tired from a hard day's work, is not going to concern herself with appropriate shaping of cognitive development. She will tend, instead, to reinforce those kinds of behavior which make her own task endurable. The child will not be encouraged to explore and manipulate his environment, nor to engage in verbal interchange of a complex type with adults - instead he will be rewarded for passivity, staying out of the way, keeping his mouth shut, or running out and playing with his peers and younger siblings, who are as much in need of help as he is.

Here are three children in a father-absent home. The child in the middle is in our first experimental group. He is already caught up in the vicious economic and social cycle that creates many of the problems observed in the Negro adolescent boy from a father-absent home. The next slide is by way of contrast. The picture on the wall, which I am afraid is too small for you to see clearly, is a marriage certificate - battered and worn, but displayed as a point of pride and distinction; here is an intact home which has endured for some ten years.

The next slide typifies another aspect of the home life of the deprived child. Here four-year olds are running errands to the corner grocery. In one sense this early independence, observed in these children's ability to dress themselves, to feed themselves, to care for younger siblings, has its strength. Its weakness is probably that it reflects much less interaction between adults and children, and a focusing of independence on things which make life easier for the adult rather than more education for the child.

This slide also suggests another aspect of the home life of the poor to which I should now like to turn - that of the stimulus potential of the home and neighborhood. In the town in which we have been working, the child's life is geographically much restricted. He knows the immediate neighborhood, the corner grocery but not the super market. Although it is probably not true that the deprived child suffers from a lack of gross amount of potential stimulus input, the range of potential stimuli to which he is exposed is usually much restricted by the poverty of the home and the lack of geographic mobility.

This last home shot I should like to use not to shock you but to illustrate what I believe is the major problem of the environment from the standpoint of stimulus input as it relates to cognitive development - that of spatial and temporal disorganization. Here you have washing day in one of our most deprived homes. An important learning task for this little boy, if he is to perform adequately in school, is to learn to order,

to classify, and to categorize. How in this welter of objects can the child learn to group objects on some such principle, for example, as use? Contrast this for a moment with washing day in a more favored home, where the mother first sorts her washing by fabric and color, and then when it comes out of the dryer in terms of use and ownership, - Daddy's socks, little Joe's T-shirts, and so on. This particular home is also sharply lacking in any sort of temporal organization. The mother works by the day, and different hours on different days. The children get up when they feel like it, or someone prods them; they eat when they're hungry - if there's anything to eat. There is little opportunity to learn sequences of events, to learn what leads to what. Fancy for a moment, how this handicapped child will be in acquiring spontaneously such Piagetian concepts as conservation and reversibility. The television set represents another aspect of this lack of appropriate organization. It booms from morning till night. Both literally and figuratively, it is just so much noise in the child's life.

And now to show you how we made use of observations of such home situations as these, and what research on social class, cognitive and motivational development, we could find, in setting up the particular intervention program we planned and carried out.

The preschool summer experiences for each group were arranged so that each group of approximately 20 had a head teacher, plus three or four assistant teachers, the assistants being largely trainees in our school psychology program or undergraduates especially recruited for the program. This slide shows our group on the first day of the second summer. The high ratio of adults to children was of particular importance for the form of intervention we planned. The staff was about equally balanced as to race and as to sex. We made especial efforts to have men teachers in the group to serve as appropriate role models for the little boys, particularly those from father-absent homes.

Few of the children were as fearful as this little girl on the first day, but most were wide-eyed and a little unsure of themselves. Like most children, however, they became comfortable in a situation where efforts were made to reassure them and to provide an interesting and predictable environment.

One of the two main classes of variables with which we were concerned in our summer program was that of attitudes related to achievement. Our paramount concern here was with achievement motivation and such related characteristics as the ability to persist and to delay gratification. During the first summer we found that gross motor activities appealed greatly to the youngsters and were one of the better ways to arouse their motivation to achieve or excel. The jungle gym was high in their favor, and was a splendid way to feel on top of the world, as seen in this young Alexander Selkirk.

Block building also served as a way of encouraging children to better their previous performances or those of others. Attention paid to the objects they were able

to produce was something new to these youngsters. We mounted their pictures on the bulletin board, admired their little clay bowls, and their magazine cutouts.

The teachers served as reinforcing agents for the youngsters. Close physical contact, with the undivided attention of an adult, was one of the most effective reinforcements we found for the children. Father-figures were especially important for the little boys from father-absent homes, although the little girls as well enjoyed male attention. The adults thus could set the pattern of approved behavior for the youngsters and themselves serve as achieving role models for the children.

Since we were working with Negro children, we were particularly concerned with the problems of self-esteem which the Negro child experiences in the WASP world he encounters in the mass media, in school, and in the world at large. The next slides illustrate the kinds of materials we tried to use when we could find them. The first is Tobe, a charming book about a Negro youngster in the rural South; I wish we had dozens like it. The two books, by Ezra Jack Keats, A Snowy Day, and Whistle for Willie, are ones with which you may be familiar. The next slide illustrates some of our own efforts to give the children a feeling that persons like them are attractive and worth attention. This is a little face which the youngsters assemble. Next is Willie Weatherman, whom the children dress appropriately according to the day outside.

Having tried to show you some of the ways in which we worked toward attitudes conducive to school achievement, I should like to go on to one to show what we did in terms of aptitudes related to school success.

In terms of general cognitive development, we were first concerned that the children acquire some of the more elementary ways of classifying their world, of seeing similarities, and differences. Most of the children in the beginning did not know their colors, at least not more than one or two. Here the teacher is using a simple knock-out bench to teach the children orange, one of the more difficult colors. These little boys are having a first experience with finger paint. They are also becoming thoroughly immersed in a color for which they had not learned the name.

Here you see some youngsters getting ready for a production of "Ten Little Indians." Number concepts were important early in our program, and we brought many things to their development, including such counting songs as this. The next slide is also about counting: the puppy is just as many days old as the number of fingers the little girl has on both hands. Here the children are playing store - a splendid activity not only for some practical experience in counting, but also good for learning to categorize.

Since the youngsters seemed somewhat retarded in perceptual discrimination, we worked with many types of material that would help increase their ability to see likeness and differences, to see relations of parts. Here are three youngsters struggling

with very simple wooden puzzles during the first winter. And here is a little girl during the summer just prior to first grade, beginning on a complicated puzzle, and here she is twenty minutes later. We used pegboards a great deal: they were useful for learning color; a child could also follow lines, and all sorts of patterns. Here in the first summer two little girls are making a row of red pegs. In the next summer one of them is attempting to copy the first letter of her name to form a pattern. And here in the third summer, she is copying a difficult pattern involving three different colors.

Language was, of course, of major concern to us, and we used many ways of trying to develop it. Telephones were a natural for such efforts and greatly enjoyed by the children. The one inch cubes were put to use for learning position words and the like. The child is putting the red block inside the green square. The old nursery rhymes were often used, and enacted to the children's delight. Here is Little Miss Muffet, and here is her male counterpart. This is the "Little Red Hen" and those who refused to help her. We used songs, rhymes, and dramatization, not only to help develop language but also to promote a liking for school-type activities, most of which were foreign to the children's home situations. Most of all we read to the children, and presently had brought them to the place where looking at books became an absorbing activity.

We have been a little dubious about the term "enrichment" as applied to a project such as ours, since the term suggests throwing a lot of new experiences at children, without appropriate concern for whether the children have developed the ability to process the new information that comes their way.

And so I have saved to the last a series of pictures which indicate the kinds of new experiences we attempted to provide, with care always that these should be paced and sequenced in such a way that the child could make use of the new information provided.

Some of these new experiences were as simple as using an easel and tempera paint, or in looking at one's hands through a tripod microscope. Even trying to blow up a balloon was a challenge to some of these youngsters. Rhythm instruments were highly attractive to the youngsters and useful for teaching such new meanings as together, faster, louder, softer, and the like. We took them to farms, where they had a chance to explore chicken houses, to see the baby calf, and to feed the pigs. A young man brought to school his mare and two-week old foal that was bottle fed. Those who had the courage were allowed to take a ride on the mare. We visited an air base, a fascinating and somewhat overwhelming experience for these youngsters. I fear this was one time they got more information than they could process; they came home as if they had been on a lost weekend. We took them to the children's museum, which was a little beyond them, even during the third summer. The dioramas and the live animals, however, bore enough resemblance to the animals they had seen on the farm and in their picture books to intrigue them.

We took them to the library, somewhat with fear and trembling as to their behavior. The trip was a success, however, and was followed up by the home visitor. Prior to the visit, only two of the mothers had ever been to the library. After the trip, and particularly with the efforts of the home visitor, we were able to get all of the mothers except two to visit the library and to take out library cards.

This is the last of the photographs of the children. It remains now to tell you of what we have collected in the way of fairly hard data in the years that we have been working with the children, and what has happened during the two years that these youngsters have been in public school.

Over the five years that we have been working with the Early Training Project, we have managed to collect a whole mountain range of data - and the end is not in sight; we find the progress of our children and their families through school, in these times of rapid educational and social change, much too fascinating to let the study drop.

Before going into the analysis it might be helpful to describe briefly some of the observable differences in the four groups that do not relate to intervention but rather to the vicissitudes of randomization. This next slide (Table I) gives the breakdown of the children remaining in the four groups as they looked at the initiation of the study. Virtually all of the children are still with us. On none of the indices that you see were the groups statistically different, although the IQ difference between T_1 and T_2 was a squeaker. When we have gone back and examined the home situations, T_2 seems a favored group as compared to T_1. There are twice as many father-absent homes in T_1 as in T_2. Precise estimates of income are difficult to come by in these families. The best comparison we could make in 1964 indicated that the income, while low in both groups, was approximately double in T_2 what it was in T_1. This point would not be worth laboring, except that, with T_2 being a more favored group, it is difficult to make comparisons of the effect of the longer intervention with T_1 as compared to the shorter one with T_2. The only time that significant differences have consistently appeared between these two groups was prior to intervention. Because of the differences in the two groups, we believe that we can say very little, if anything, about the relative effectiveness of the two lengths of treatment which we employed. The other three groups appeared more similar on family indices. If we had to rank them in terms of general favorableness of the family situation, we would rank T_2 first, T_4 second, T_3 third, and T_1 fourth.

Probably a word should also be added about the differences in the two communities, since this becomes important in comparing local and distal control groups. The general economic situation in our major city is a little better (the population at least is increasing more rapidly), and the school system is slightly superior, as well as we can judge. On the other hand, the general economic situation of the Negro is better in our distal city, and has been so for many years, because of the presence of certain major industries that have hired Negroes in well-paying positions. We believe now,

STATUS IN MAY, 1962, OF FOUR EARLY TRAINING PROJECT GROUPS
USED IN 1966 ANALYSES

	T_1 (Exper.)	T_2 (Exper.)	T_3 (Local Control)	T_4 (Distal Control)
CA (mo.)	45	46	47	45
Binet MA (mo.)	39	42	41	40
Binet IQ	86	91	87	88
PPVT MA	30	30	28	32
PPVT (raw score)	19	20	18	22

as we did at the time we chose the distal city, that it is the best match we could find. We have been troubled, however, by certain differences in the school system, and for this reason have tried where possible to make comparisons that would take this into account.

From 1962 through 1964, we have pre- and post-tested all four groups in the months before and after the special summer school. Routinely we have used the Binet and the Peabody Picture Vocabulary Test (PPVT). Starting in 1964, just prior to school entrance, we added the Illinois Test of Psycholinguistic Abilities (ITPA) and the WISC. These last two have been given once yearly, and the WISC has been alternated with the Binet. I should like first to go into our analyses of these data.

Our method of analysis has been to use Lindquist mixed designs, Type I, III, or VI, whichever was appropriate to our data. Where significant Fs occur, as they have in our data, we have used orthogonal comparisons to locate the sources of differences in groups. We have thus compared T_1 and T_2 combined with T_3 and T_4 combined, and then made additional orthogonal comparisons of T_1 and T_2, and of T_3 and T_4. These seem to us the most meaningful group comparisons for assessing the effects of our intervention program and of diffusion effects.

Now for the Binet. The next slide (Figure I) gives MA scores from May of 1962 to June of 1966, a period of 49 months. At all points since intervention began with T_2, we have found significant Fs for the comparisons of the experimental and controls. The general curves are ones of increasing divergence up to school entrance and then, in the school years, some closing of the gap. As you can see from the graph, the greatest difference in groups was just prior to school entrance. At this time T_1 had shown an IQ gain of 9 points and T_2 of 5 points, while the local and distal control groups had lost 4 and 7 points respectively. You can also see that the curves maintained approximately the same slope for the experimental groups during the first grade (August 1964 to August 1965) while both of the control groups showed some acceleration. Also apparent is the slight deceleration straight across the groups in the past year. None of the four groups in this last year made as many months of gain in mental age as might be expected with "normal" progress. This is a finding to which I wish to return later.

Now for the WISC (Figure 2). Since I thought you might be interested in the sub-tests, we have combined the three administrations. In general, the profiles are similar at all ages. Here you can see the striking deficiency in vocabulary, and the slight superiority shown on similarities. Experimentals are superior to controls on six sub-tests: information, arithmetic, vocabulary, picture completion, block design, and object assembly.

On the Peabody Picture Vocabulary Test, (Figure 3), you see a graph somewhat similar to that for the Binet, in that you have a divergence of experimental and controls once intervention has begun, with considerable closing of the gap in the second year

BINET MA – SCORES FOR ETP TRAINING AND CONTROL GROUPS

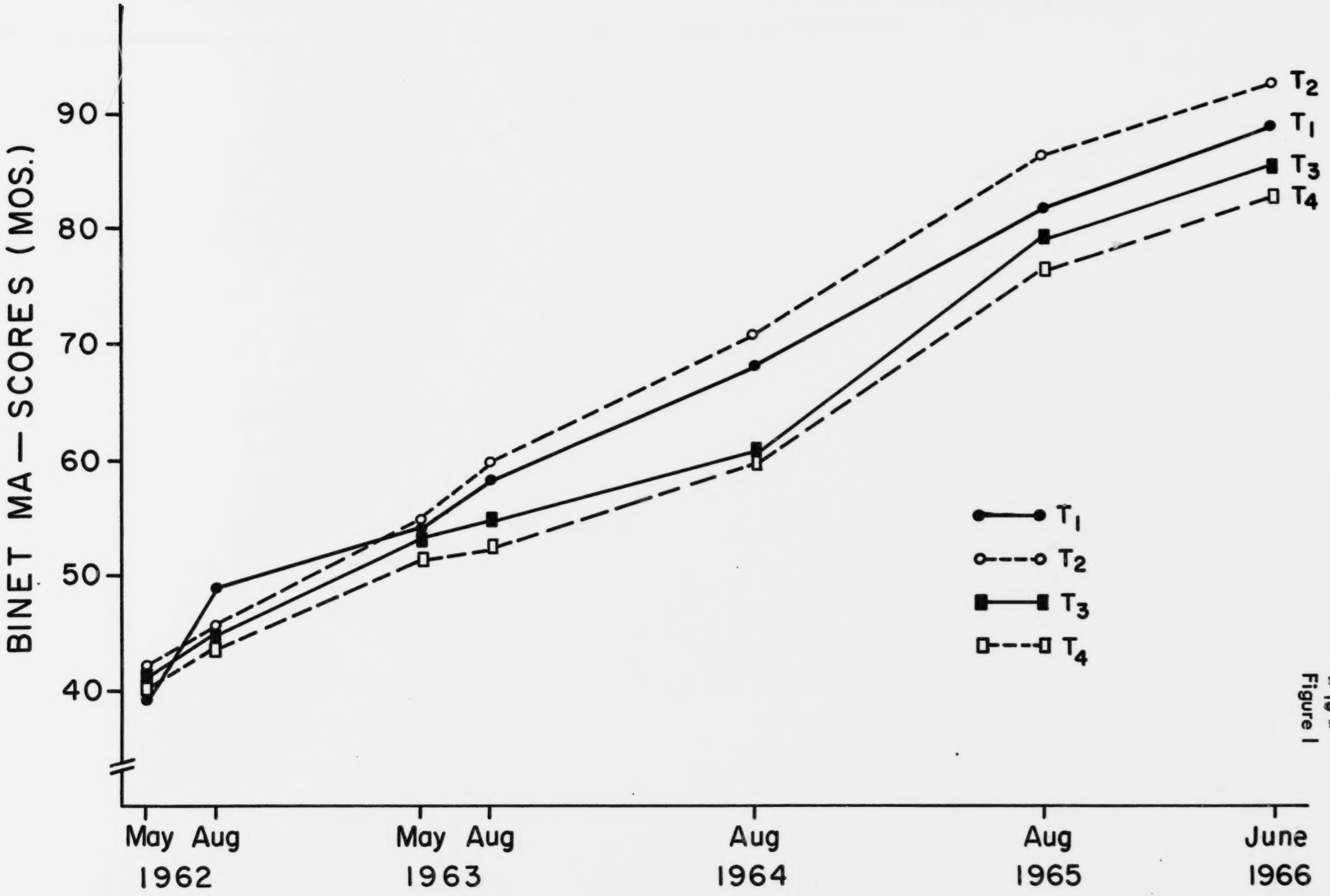

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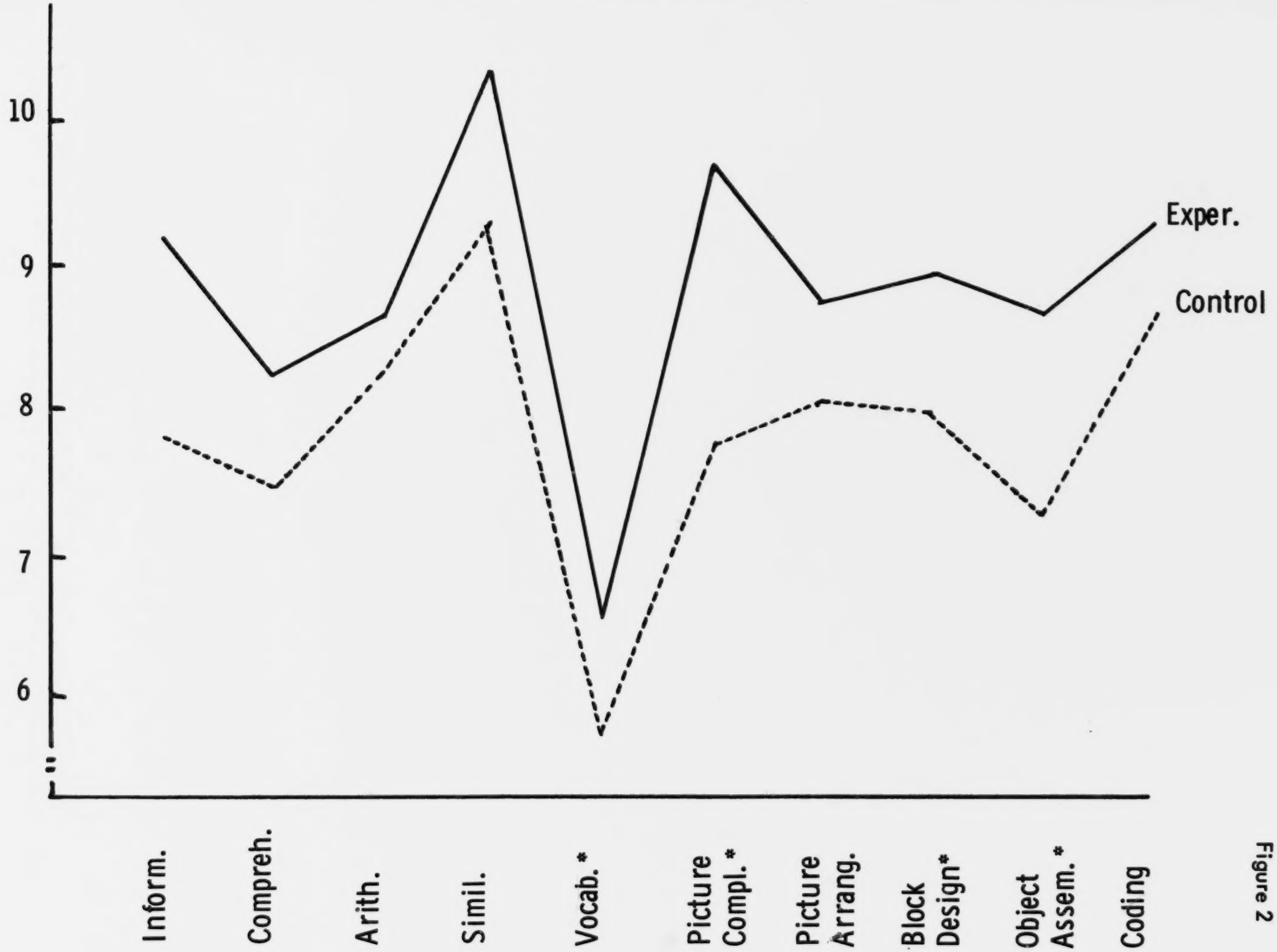
Figure 1



WISC Subtest Scaled Score Means for ETP Experimental and Control Groups
(1964, 1965, and 1966 Combined)

PPVT – MA SCORES FOR TRAINING AND CONTROL GROUPS

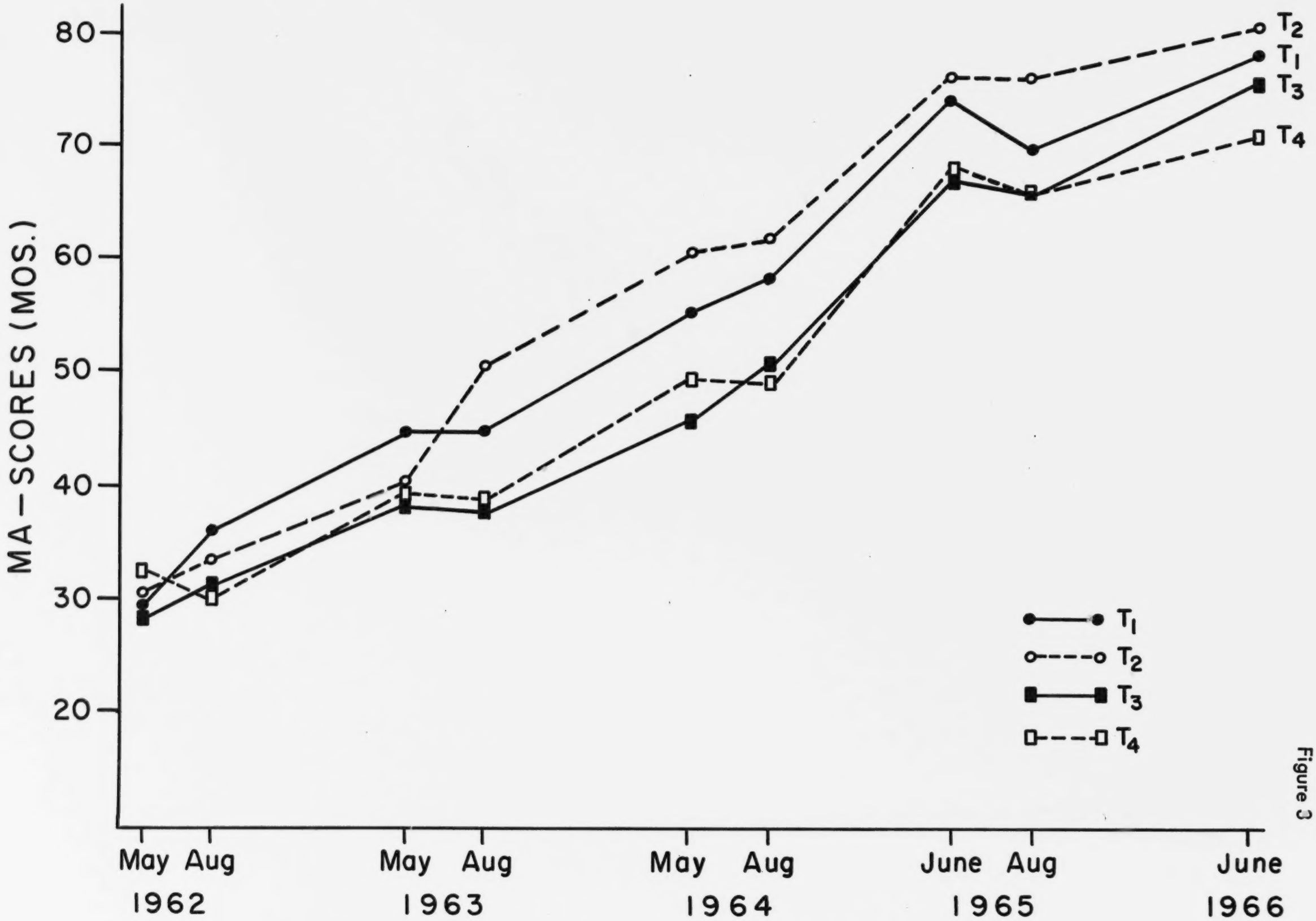


Figure 3

of schooling. In 1966, the experimentals are still superior to the controls, and the local control group is superior to the distal one.

Next we have a slide giving results on the ITPA (Figure 4). The three testings have been combined to give some notion of the general profiles. Here you can see that the differences are not great, and that the profiles of the experimental and control groups are almost parallel. The most conspicuous score is probably that on Auditory Vocal Automatic. Those of you who are familiar with the test will recall that this sub-test demands the sounding of final consonants. The sub-culture from which these children come, lower-class southern Negro, is generally deficient in pronouncing final consonants; these children presumably are continuing the pattern acquired in their homes. In the Type VI Analysis of Variance which was performed, there was a significant group effect, a significant sub-test by administration, and a significant sub-test by group interaction. Sub-analyses indicated that, insofar as the effects of intervention go, differences are largely attributable to the performance of experimental and control groups on the 1964 administration; they do not differ appreciably thereafter.

So much then for the summary of our tests which have been given over time. From them I believe the picture is relatively clear that the maximum effect of intervention was obtained just prior to school entrance, exactly what we would expect. Although differences in experimentals and controls are still significant on the Binet, the PPVT and the WISC, the differences are of somewhat smaller magnitude.

But these tests were used largely as bench marks In the Early Training Project our concern has been chiefly with what happens in terms of school performance. Before trying to interpret these bench mark data, then, I should like to give you a picture of what has happened in the first two years of public schooling.

Like many others, I am somewhat skeptical of the adequacy of achievement tests in the first grade, and even in the second, as predictors of general school competence in the later years. Still, along with the measures already described, they are about the best we have available at present to answer the question of improvement of educability.

First, I should like to show you a data-filled slide (Table 2), which refers to first year performance on the Metropolitan Achievement Test. In Humpty-Dumpty's terms, it is a portmanteau slide, because I hope to illustrate several things with it, if you will bear with me.

First, if you will, look at the bottom section of the slide where the four treatment groups are compared, plus another group, which is included because it represents a comparison with children who presumably had little contact with the experimental and control children. You can see from these scores that typically the experimental children score a little higher than the local controls, and the local controls a little higher than the non-ETP group, and at about the same point as the distal control

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES
EXPERIMENTAL AND CONTROL GROUPS: COMBINED 1964, 1965, 1966 SCORES

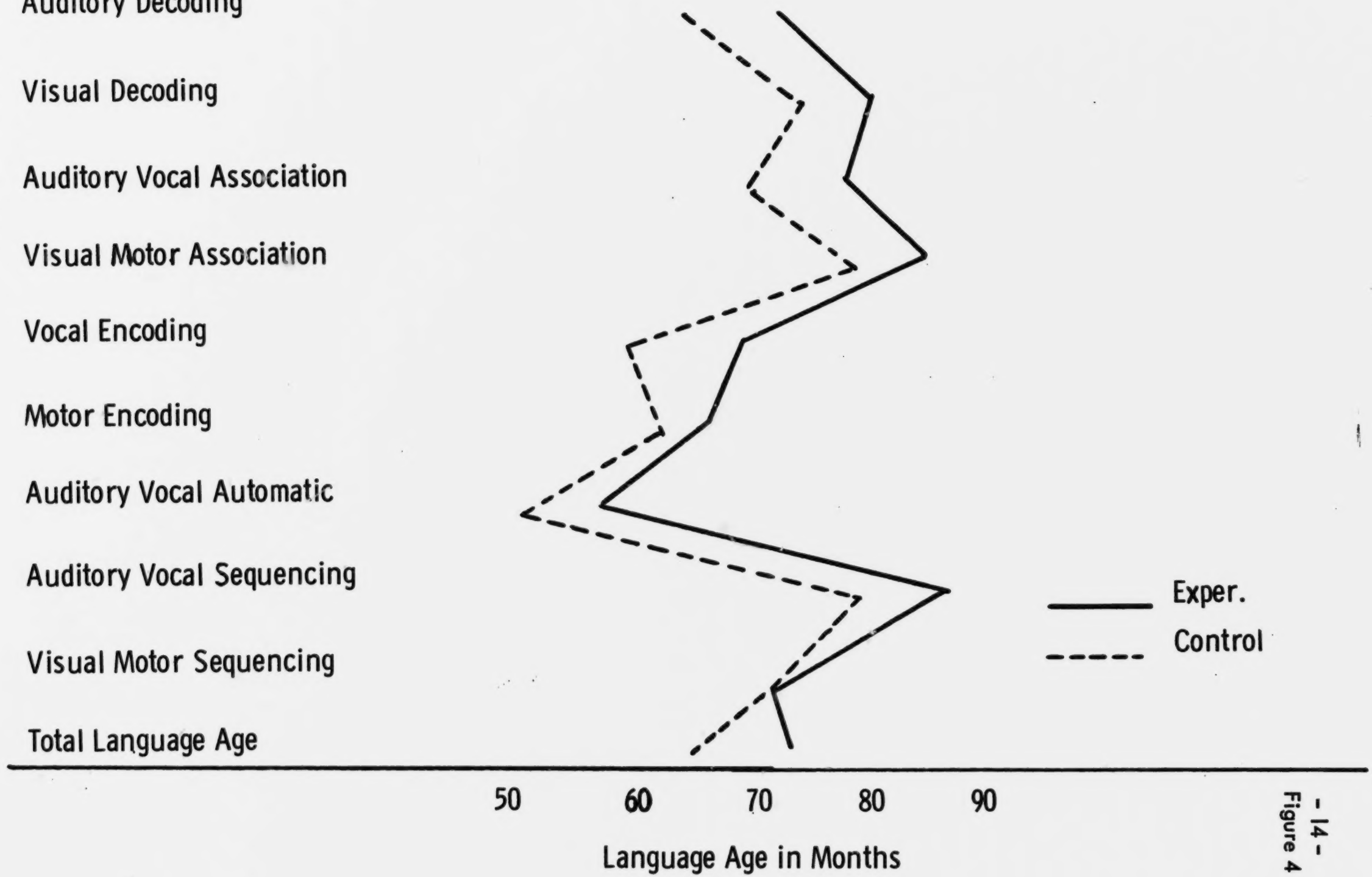


Figure 4

Early Training Project First Year Scores

Annual Median Grade Equivalent Scores on Metropolitan Achievement Test, Primary Battery; First Grade; (Norm = 1.8)

	N	Word Knowledge	Word Discrim.	Reading	Arith.
Local School					
1961	61	1.69	1.77	1.72	1.64
1963	88	1.65	1.59	1.69	1.42
1964	89	1.63	1.58	1.71	1.57
1965	91	1.74	1.77	1.87	1.43
Distal School					
1962	47	1.60	1.64	1.61	1.47
1963	82	1.58	1.49	1.56	1.45
1964	81	1.47	1.42	1.54	1.41
1965	111	1.42	1.39	1.52	1.43
T_1 & T_2	43	1.71	1.73	1.89	1.61
T_3	18	1.65	1.75	1.75	1.38
Non-ETP deprived (local)	9	1.48	1.50	1.51	1.23
T_4	23	1.33	1.30	1.54	1.28

group. None of the differences in the two experimental and the two control groups are significant. Some of the differences, especially between the two control groups, are sizeable, but the large variance meant that differences are not significant, except in the case of word knowledge, where T_3 is superior to T_4.

Although the differences are not significant, their general patterning prompted us to inquire a little more into first grade performance in the schools, with particular concern for the possibility of diffusion from the experimental to the local control group. I might add that this general patterning showed up on practically every measure we took upon the children during the first year. A Kendall Coefficient of Concordance for thirteen measures upon the four groups was .86 ($p < .001$).

With the hunch that the introduction of 43 experimental children into the first grade of 91 children might have an effect upon over-all first grade performance, we next looked at performance scores on the Metropolitan Achievement Test, which were available at the two schools. These data you can see in the top two sections of the table. In the local school (where the 1962 data were not available in usable form) scores appear to show no patterning until one reaches 1965, the year in which the experimental children were in first grade. In this case there does seem to be a general improvement, except in arithmetic. This is most conspicuous in reading, which is probably the best predictor of these four scores for future achievement.

In the distal school, another pattern emerges, which is one of a slight but consistent decline over the past four years. There is some informal evidence that this may be related to an increase in the number of children from relatively deprived backgrounds who have entered the school, but this is mostly guess work.

One thing that troubles us is the generally inferior performance of the distal school. As a partial check on the differences in schools, we went back to look at the performance of the older siblings of the children in the two experimental and the two control groups, on the assumption that differences in the general adequacy of the schools should appear in the older siblings test scores, and that these would be relatively independent of any treatment effect of our intervention. This we did, and calculated gain scores for these children, from a first to second testing on the Metropolitan. In this comparison there are no significant differences in the amount of gain shown by the older siblings of T_1 and the local and distal control groups. The older siblings of T_2, however, made significantly more gain, part of the picture of the greater adequacy of the T_2 families already mentioned. Since T_1 and T_3 showed the same patterning as T_4, we are inclined to think that we are not dealing simply with a comparison of two school systems but may be dealing instead with a phenomenon of spread of effect, which we have termed horizontal diffusion. I should like to return to this in a moment, after we have looked at achievement test scores for the second year.

First for the results on the Stanford Achievement Test (Table 3). Three things, I believe, emerge from this slide. First, and regrettably, none of the groups is performing

STANFORD ACHIEVEMENT TEST SCORES MEAN GRADE EQUIVALENTS, MAY 1966

	Word Reading	Para. Meaning	Spelling	Word Study Skills	Arithmetic	Vocabulary
T_1 (Exper.)	2.2	2.4	2.2	2.0	1.9	1.9
T_2 (Exper.)	2.2	2.4	1.9	2.2	2.2	1.9
T_3 (Local Control)	2.1	2.2	2.2	2.3	2.1	1.9
T_4 (Distal Control)	1.7	1.7	2.0	1.6	1.7	1.7
	$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 \quad T_4$	$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 \quad T_4$	NS	$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 \quad T_4$	$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 \quad T_4$	NS

up to grade expectation, since at this point they should have been at approximately 2.8 in mean grade equivalent. Secondly, the experimental children are superior to the control children in four of the six tests, as can be seen at the bottom of the slide. Most of the variance here, however, was contributed by the distal control group. On these same four tests, the local control group is superior to the distal control group.

Now for the Metropolitan Achievement Test results (Table 4). The next slide shows much the same picture as was shown with the Stanford Achievement Tests insofar as the relative status of the several groups is concerned. Again, most of the variance is contributed by the fourth group, although it is only on arithmetic that it is inferior to the local control group. An additional feature of this table is that it shows the mean gain since the time that the children were tested a year earlier. The gain scores suggest a slightly less than average progress on the part of all these groups. In T_2 and T_3 it is close to normal, approximately .9 of a year, while it is slightly less in T_1 and T_4.

How do we make sense out of these findings over four years since we began intervention, and over two years of public school?

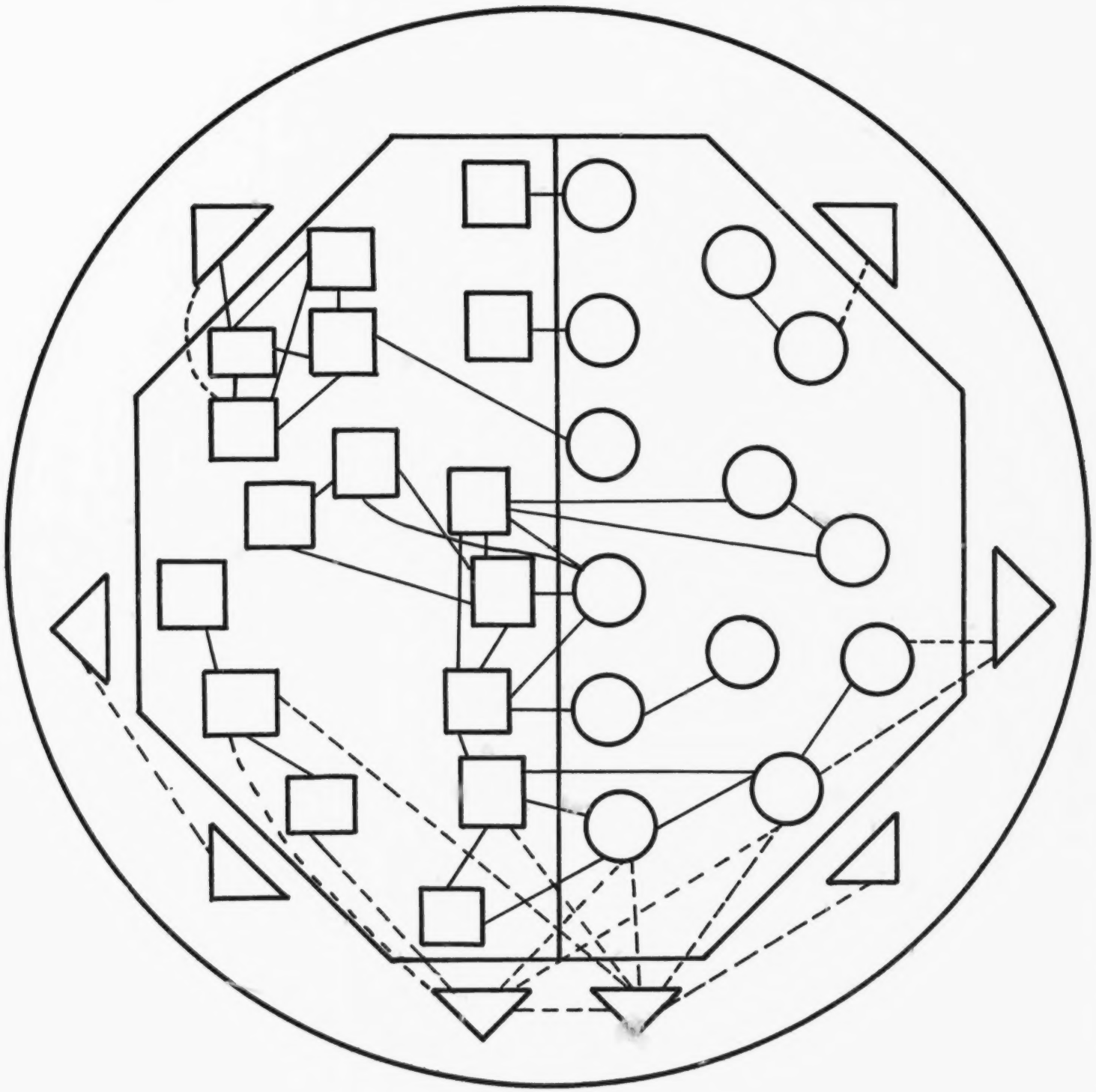
We can begin with the perpetual cry of the psychologist that we need more data before we are able to draw adequate conclusions. Indeed we do, particularly since first and second grade achievement tests are not the best predictors. But let me at least be rash enough to try to interpret our data and at the same time to give you a little more information that may shed some light on these findings.

First, we might try to explore possibilities as to why the local control group in general performs more adequately than the distal control group. Differences in school systems are a distinct possibility, although you may recall that we did not find differences in gain scores for older siblings between the two schools, with the one exception of the T_2 group. The other possibility is that of diffusion into the local control group. The data you have seen, particularly the jump in first grade performance in 1965 in the local school, suggest this possibility. This we might term a product of diffusion. We have also been interested in the process of diffusion within the community. Our home visitor has supplied us with some evidence, mostly of an anecdotal character. My favorite is about the mother of twin boys in the local control group. Although she had only a passing acquaintance with the woman next door, when that woman's child was selected for the first experimental group, she became a daily visitor. Whatever things the experimental child brought home from school, or whatever the home visitor left with her, such as books and drawing materials, the twins' mother bought for them. They are now very competent little boys. In a little more data-oriented way, we have, through our home visitor's contacts, been able to establish fairly well certain patterns of kinship among the three local groups. The next slide (Figure 5) shows that all groups are related, although T_1 and T_2 are more closely so than is either group with T_3. After two years in the homes of the children, the home visitor was also in a position to estimate with fair accuracy the number of sustained contacts between experimental and control

Metropolitan Achievement Test Scores, 1966,

Mean Grade Equivalents and Gains from 1965 Administration

		Word Knowl.	Word Disc.	Reading	Arithm.
T_1 (Exper.)	Mean	2.3	2.6	2.5	2.4
	Gain from '65	.6	.9	.7	.8
T_2 (Exper.)	Mean	2.5	2.7	2.8	2.6
	Gain from '65	.8	1.0	.8	.9
T_3 (Local Control)	Mean	2.3	2.6	2.6	2.5
	Gain from '65	.6	.9	.8	1.1
T_4 (Distal Control)	Mean	2.0	2.2	2.1	2.0
	Gain from '65	.6	.9	.6	.8
Significant Differences in Means		$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 = T_4$	NS	$(T_1 + T_2) > (T_3 + T_4)$ $T_1 = T_2$ $T_3 = T_4$	$T_3 > T_4$



EARLY TRAINING PROJECT
KINSHIP PATTERNS

○ — T_1 (Experimental)

□ — T_2 (Experimental)

△ — T_3 (Control)

——— Kinship of Ss T_1 and T_2

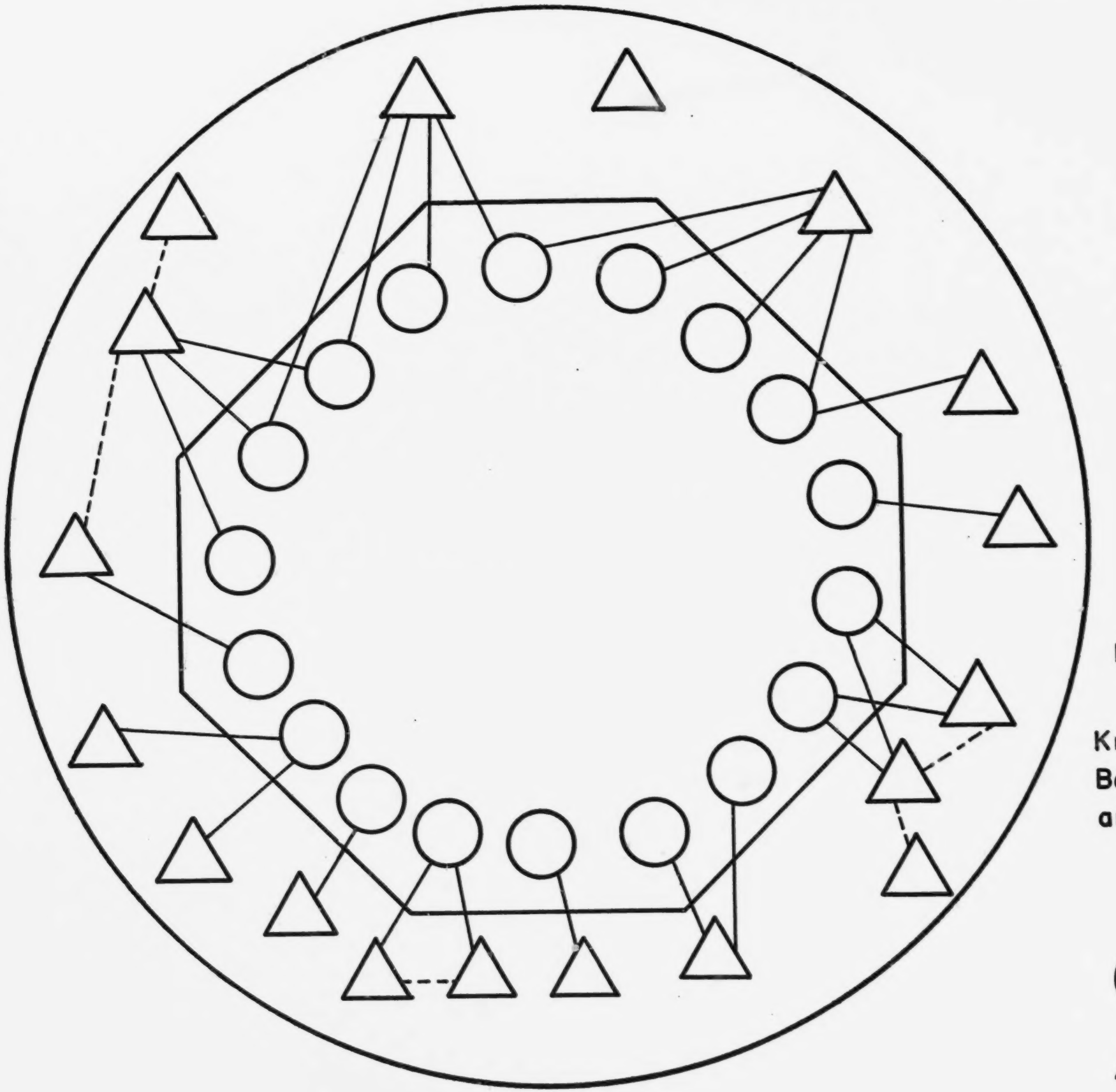
------ Kinship of Ss T_1, T_2 with T_3

Figure 5

families. This is shown in the next slide (Figure 6). Here you can see that there is only one child in the local control group from a family that has no direct or indirect contact with an experimental family. In six cases, a child has at least two direct contacts.

We have also been interested in the process and product of diffusion within the family group, which we have called vertical diffusion to distinguish it from the diffusion across groups, which we have termed horizontal. We have already analyzed data on 57 younger siblings of the Early Training children; the results of this analysis are shown on the next table (Table 5). These results do not admit of an easy interpretation. One might expect that, if diffusion is taking place, the younger siblings should be superior to their matches in the experimental groups. Instead, scores are the same in the first group (which had the longest period of home visitor contacts) while a 5 point discrepancy is shown in the second group (with the shorter intervention period). Both of the control groups, however, show discrepancies of at least 13 points. These differences are significant. Our guess, which we have not been able to test adequately as yet, is that the younger siblings' scores, across the board, are slightly depressed by three possible factors: (1) they were older at the time they were tested, as you can see from the table; (2) there may have been a consistent examiner bias since the same person tested all four groups; and lastly (3) we have a notion, on which it is difficult to find or gather hard data, that ordinal position may be a variable in test performance in deprived families. Each additional child places a heavy drain on the family's resources of money, time, energy, and affect. We have just finished testing 77 yet younger siblings of the project children. We hope that our analysis of their scores will shed a little more light on this problem.

Next, and finally, we might look at what I am inclined to call dispersion, to follow the three D's of my title. Does the effect of a preschool intervention program inevitably wear off over time? Some people claim this and offer data to substantiate it. Other persons, such as David Weikart, have some hard data suggesting an effect that lasts well into the school years. I suspect it depends on nature of the program. We believe that our data - so far - show two things. One is that a program of preschool intervention as extended as ours and as tailored to the problem can have lasting effects. Our results on the Binet, the PPVT, and the WISC substantiate this. There is some suggestion of it in the other data, although it is less clear cut. Secondly, we believe that our data have something to say about the relevance of the nature of the public school and the community in which it is imbedded for maintaining the gains made during an intervention program. The schools to which most of our children go are good schools in many respects. In others, they leave something to be desired. All of our distal children and all but nine of our local children are in schools in which during the past year all children and almost all teachers were Negro. They continue to live in the same segregated communities, which have not changed greatly over the five years we have been testing the children. We are inclined to think that two things may be important here. One is that the motivational and cognitive patterns which we have tried to instill in our experimental children have not been sufficiently capitalized upon by the



EARLY TRAINING
PROJECT

Known Contacts
Between Experimental
and Control Children

---EXPERIMENTAL

----CONTROL

Figure 6

Binet IQs of Early Training Project
Children with Younger Siblings of Testable Age, 1964

	T_1 (Exper.) N CA IQ (Mos)	T_2 (Exper.) N CA IQ (Mos)	T_3 (Local Control) N CA IQ (Mos)	T_4 (Distal Control) N CA IQ (Mos)
Total Group	22 45 86	21 48 91	19 47 87	26 46 87
Project Children with Younger Siblings (Initial Testing)	12 47 82	16 47 89	7 50 84	12 48 88
Younger Siblings (Initial Testing)	13 54 82	21 53 83	9 54 71	14 62 74

Metropolitan Achievement Test Scores:

Mean Gains from 1965 to 1966 of Two Groups of ETP Children

	N	Word Knowl.	Word Disc.	Reading	Arithm.
ETP-Ss who transferred to a White School in 1965	9	.96	1.45	1.35	1.40
ETP-children who remained at Negro School matched on IQ to the first group	9	.72	.86	.89	.72
Differences in favor of transferred group		.24	.59	.46	.68

schools, since these schools deal largely with children that were like ours before our intervention project began. The other is that in these schools there appears to be somewhat more concern for the outward appearance of the school and its pupils than there is for the learning of the children. This is characteristic of schools in deprived neighborhoods; ours are not unusual. It does mean, however, that achievement may suffer.

As one check on this possibility, we thought it would be interesting to compare the gain scores of the nine children who transferred to previously all white schools in the fall of 1965 with a group of nine children who did not transfer but who were matched on IQ, and, as best as we could, on parental aspirations. These findings are shown in our last slide (Table 6). With the small number of cases, and the difficulty of providing an adequate match in terms of motivational variables, I do not put too much credence in our findings. Nevertheless it is interesting to see that all differences favor the transferring children, and, that except in word knowledge, differences are sizeable.

Not only the school, but also the home, must be considered. Certainly, if no massive changes are made in the home conditions of children, it would be surprising if the situation that created the original deficit did not continue to take its toll. Our home visitor did work with each mother in a weekly session. Once a week for only two or three years, however, is hardly enough to bring the mother up to providing a home situation analogous to that of a more favored middle class child, who is the one who makes the "normal" progress on aptitude and achievement tests.

We began the Early Training Project with the question as to whether it is possible to offset the progressive retardation usually observed in deprived children as they go through the years of elementary school. We have not answered the question, yes or no. It probably can only be answered, "It depends." It depends first on the intervention program, but the intervention program cannot carry the whole burden. We suspect that it is possible to offset progressive retardation by a carefully designed preschool program - ours at least has lasted through the second year of school - but that it is folly to hope that such a program can continue to offset inadequate schools in later years. Our findings on horizontal and vertical diffusion make us hopeful that intervention programs can have long lasting effects that go beyond the immediate children with whom one may be working. Such programs, however, cannot be expected to carry the whole burden of providing adequate schooling for children from deprived circumstances; they can only provide a basis for future progress in schools and homes that can build upon this early intervention.